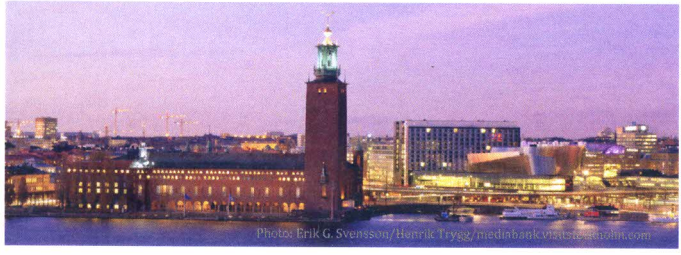
6th Int. Conference on

Silicon in Agriculture

Stockholm, SWEDEN, 26-30 August, 2014



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Theme 6
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Silicon and bioagents in leaf rice blast suppression

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Rice is considered a cereal that has the potential to eradicate hunger and malnutrition. However, during its cultivation, is submitted to biotic and abiotic stresses, which lowers productivity in key growing regions, followed by the rising cost of inputs such as fertilizers and pesticides. The aim of this work was to study the effect of silicon, alone and in combination with bioagents on leaf blast suppression of on upland rice.

Two experiments, E1 and E2 were conducted in a factorial design at greenhouse conditions. E1: aimed to select the best treatments for rice blast (*Magnaporthe oryzae*) suppression. It was composed by 5 plots (control; 1 ton SiCaMg ha^{-1}; 2 ton SiCaMg ha^{-1}; 4 ton SiCaMg ha^{-1}; 8 ton SiCaMg ha^{-1}), 5 subplots (control; *Burkholderia pyrrocinia*; *Pseudomonas fluorescens*, *Trichoderma asperellum*; mixture of all these three bioagents) and 8 replication. E2: aimed to investigate the defense mechanisms of the best treatment selected in E1. It was composed of 2 plots (control; 2 ton SiCaMg ha^{-1}) and subplot 3 (control; *Trichoderma asperellum*; mixture of all these three bioagents) and 4 replication.

Silicon fertilization and bioagents interaction proved to be promising. In E1, the combination of all three bioagents with 2 ton ha of SiCaMg plants fertilization was the best treatment reducing 96% of leaf blast. In E2, the two best treatments in E1 statistically increased chitinase (CHI), glucanase (GLU), peroxidase (POX) and phenyl ammonia lyase (PAL) activity as well SA content in the absence of *Magnaporthe oryzae*. However, 24 and 48 hours after challenger inoculation with *M. oryzae*, only CHI and GLU activity and SA content statistically increased in the treatment that combined all three bioagents and 2 tonnes ha^{-1} of SiCaMg plants fertilization. The reduced leaf blast followed by the active participation of defense mechanisms elect the silicon fertilization and bioagents as important strategies for rice blast sustainable management.

Finacial Support: CNPq/Fapespa